Digital Camera Setup for Lunar Photography
(Canon A560)

- Most manuals make little sense till you have the camera in front of you and ready to go. Here is a short cut guide, below, with the key info. Don't spend too long trying to figure out any given instruction. Start pushing buttons on the camera as soon as you have a rough idea what the instructions are trying to say. If you spend too long reading the manual or these instructions without trying things out on the camera, you will go insane.

- **Batteries** are installed. You are responsible for replacing these if needed. NOTE – Battery Compartment: Turn the camera upside down with the lens facing you. Pull the battery compartment 'slide' toward you and then to the right! If you just pull back, it will NOT open. Figure on a new set every few hours of operation. Alternatively, Ni-MH rechargeable batteries can be used if you have them. DO NOT use NiCd or regular, cheap, non alkaline batteries. If you remove the batteries from the camera for some time, it will probably forget your settings.

- The **memory card** is installed. This will allow you about 10-20 pictures before having to download to your computer. The number of remaining frames is displayed at the bottom right.

- The **ON/OFF** switch is on top of the camera and labeled On/Off.

- Leave the camera in **Manual Mode** 🌟. This is the dial on top of the camera.
  - **Note:** you are welcome to play around with the camera. However, if you turn the camera on and it is NOT in Manual Mode, it will forget some of the necessary settings. You will have to reset these by hand.

- After a few minutes the camera automatically turns off.

- The camera **date** has been set. This will be very helpful to you in remembering when your photos were shot. But keep your own records anyway.

- **Menu SETTINGS (see diagram at end for control locations)**
  These have already been entered. I list them here for when they get screwed up. Mostly we want to turn everything off. No auto face detection (no it won’t work on the Man in the Moon), turn off the flash (no way is it going to reach 240,000 miles to the moon!), turn off the focus assist beam (that only goes 10 feet, not 240,000 miles), etc.
  - Turn On camera
  - Press the Menu Button (#8)
  - Press the top and bottom of the Control Ring (#12 and (#14) to move up and down the menu.
  - Use the Left and Right Control Ring Buttons (#11) & (#13) to change the settings. (The setting is automatically locked in as soon as you go to the next line. No need for an <Ok> or anything like that.
  - The Important Settings are:
    - AiAF <On> (this may need to be change if you have focusing problems)
    - Digital Zoom <Off>
    - Slow Synchro <Off>
    - Red Eye <Off>
    - AF Assist Beam <Off>

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• Review (I chose 4 sec; suit yourself. This is the length of time a picture appears on the LCD after shooting.)
• Suggested: Set Display Overlay to <Grid Lines>
• Date Stamp <Off>. Note the date is embedded in the file anyway.
• When you have gotten to the bottom of the menu, one more click on (#14) takes you back to the very top line. Move one menu step to the right by pressing (#13). This will light up the icon with the hammer and wrench.
• Under this list of settings, I recommend setting Auto Rotate to <Off>. This will maximally utilize the LCD for examining your images.
• Press the Menu button (#8) to exit the menu system

• Manual Mode Settings:
  • Make sure the dial on top is set to Manual Mode.
  • Press Function Set (#7) to bring up a menu on the left side. It is again the case that the Control Ring can be used to move up and down (#12) & (#14) and change the setting (#11) & (#13).
    • The first line +/- 0 can be used to increase or decrease the exposure if the moon is coming out to dark or to bright. Start by leaving it on 0.
    • The second line is for Auto White Balance. I suggest leaving that as is.
    • The third line (default Off) is for messing with the color space. Don’t; unless you are just playing.
    • The fourth line is for the exposure mode. I suggest using <Spot>, but if you are getting bad exposures, play around here.
    • The fifth line is for the degree of image compression. I suggest <Fine> or <Normal> to get as many shots as possible on your memory chip.
    • The sixth line is for the resolution. <M1> yields higher resolution and fewer shots on the memory card. <M2> and <M3> allows more shots at somewhat lower resolution.
    • Fine – M1 allows ~ 10 pictures. Normal – M3 allows ~ 68.
    • I recommend Fine – M3 for adequate resolution and ~ 26 shots.
  • Press Function Set (#7) again to exit this menu.

• Additional Manual Mode Settings:
  • With the camera on, press the Flash Control Button (#13) repeatedly until you get the No Flash Icon (a lightening bolt with a ‘no symbol’ through it)
  • Finally, press the ISO button (#12) until ISO 400 shows. If you are consistently getting pictures showing motion blur, try increasing this to ISO 800.
  • These last two settings lock in automatically as soon as you stop pressing the control ring.

• Take a few pictures of your naval.
• To look at the shots, switch the camera to play back mode. Press Control Button (#10).
  • Use the Control Ring, left and right, to step through the pictures.
• Use the Zoom Control lever on top of the camera to zoom in on the displayed picture.
• Use the Control Ring to move around the zoomed picture.
• Press the Menu Button (#8) to exit the zoom mode.

After shooting a few practice pictures, learn how to erase frames.
• When displaying a picture, press Control Ring erase (#14). Then confirm by pressing Function Set (#7).
• To erase all the images. Press Image Display (#10), press Menu (#8), Use the Control Ring to step down to Erase All, click Right Function Ring (#13) to select All, click right again to confirm, Press Function Set (#7) to erase all images.

• At the Telescope:
  • Focus:
    • Center the moon in the low power eyepiece and focus with your eye for a sharp image (smaller is sharper!)
    • Re-center the moon.
    • Hold the camera up to the eyepiece; zoom in till the moon nicely fills the LCD.
    • Press the shutter halfway. Focus lock is indicated by one or more green boxes showing up on the display. Now, finish the shutter press.
    • Examine the image using maximum zoom magnification. It should look reasonably sharp.
      • If not, try a few more shots.
      • If still not sharp, try shifting the telescope focus slightly by turning the focus knob on the telescope.
      • If still un-sharp and you are nearsighted, try putting the camera in Macro mode; press Left Control Ring (#11). This has to be reset after every picture.
      • If still un-sharp, make sure the moon is not in the clouds.
      • If still un-sharp, try increasing the ISO to 800.
      • Still un-sharp; bring me your results and let’s talk.

• Exposure
  • There is no perfect exposure. The limb of the moon will generally always be bright and over exposed. We want just enough exposure to see the terminator (day/nite line on the moon) clearly but on the dark side. Then a bit away from the terminator the moon is brighter and the exposure should be just right. Continuing on to the edge, we will find over exposure.

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Control:
- I found the following worked well (at least for a half moon). The camera sets the exposure by the brightness of the scene inside the white box in the center of the LCD screen. If this white box is placed over the terminator when you do the shutter half press to adjust focus, the exposure will be set for the terminator. It will be fine, but the rest of the moon will probably be over exposed. Instead, place the white exposure box on the moon partway between the terminator and the bright limb of the moon. After pressing the shutter half way to lock focus and exposure, you can readjust the camera aim to center the moon. Then complete the shutter press.
- Alternatively, you can use the exposure compensation of the camera. While in live view mode, press the Function Set (#7) to bring up the menu on the left side of the screen. The red highlight box will be on the +/- 0 setting. Use the Control Ring (#11 and 13) to shift the exposure to brighter (+) or fainter (-) and press Function Set (#7) to lock it in. This setting will be remembered, even if the camera is turned off, until you redo it.

ZOOM
- After you get some good pictures, you may want to try zooming closer to the moon. You can try the high power eyepiece (shorter) or zoom in with the camera control. My tests shots, see Web, suggest that little to no additional detail is visible when zooming to a larger image size. Your mileage may vary.

Examples:
Be sure to check out the examples on my web site to get a feeling for what is possible with your camera and telescope. You will find that, with care, amazing pictures are possible. The pictures straight out of the camera should look pretty good. If you have any photo manipulation skills, you can improve the picture by adjusting the brightness and contrast. A little unsharp masking will also help. If this is all Greek to you, bring you picture by on a USB key and I will do it for you. (I prefer, you come in person rather than emailing me as I would like you to observe the process in action.)

Many people think the full moon will look the most impressive in a photograph. This is generally wrong. Anything but full will look best as craters will be better seen along the terminator. A full moon shot can look good, but it generally needs some contrast enhancement first. You will especially want to bring these by for me to fix up.
Controls

① Indicators (p. 4)
② Power Button (p. 9)
③ Zoom Lever (p. 13, Advanced Guide p. 60)
   - Shooting: [ ] (Wide Angle)/[ ] (Telephoto)
   - Playback: [ ] (Index)/[ ] (Magnify)
④ Shutter Button (p. 10)
⑤ Shooting Mode Dial (pp. 9, 11)
⑥ [ ] (Print/Share) Button (p. 21)
⑦ FUNC./SET (Function/Set) Button (p. 19, Advanced Guide p. 18)
⑧ MENU Button (p. 20, Advanced Guide p. 19)
⑨ DISP. (Display) Button (Advanced Guide p. 12)
⑩ [ ] (Playback)/[ ] (Shooting) Button (p. 7)
⑪ (Macro)/[ ] Button (p. 15)
⑬ [ ] (Flash)/[ ] Button (p. 14)
⑭ [ ] (Continuous)/[ ] (Self-timer)/[ ] (Single Image Erase)/
   [ ] Button (pp. 16, 18, Advanced Guide p. 32)